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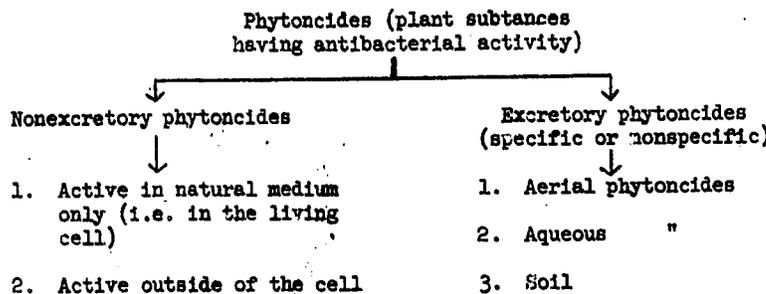
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SOURCE Priroda, Vol XXXIX, No 10, p 54.

EFFECT OF PHYTONCIDES ON THE FORMATION OF AGGLUTININS

O. Savchuk

Since the publication of Professor B. B. Tokin's "Phytoncides -- Essays on Antiseptics of Plant Origin," Press of the Academy of Medical Sciences USSR, Moscow, 1948, increased attention has been paid in the USSR to the study of these antibiotics derived from higher plants. Extensive work on the subject had been done before. In the course of this work it was established that the potent phytoncide contained in garlic has a glucosidic character (Vestnik Akademii Meditsinskikh Nauk SSSR, No 1, 1947). According to Tokin's classification, which is schematically outlined below, the tissue juices of onion, garlic, and of many other plants contain nonexcretory phytoncides that exert an antibacterial action outside of the plant. The active substances in question may be glucosides or, in some cases, alkaloids.



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Among the excretory phytoncides, of which some are volatile, the ones having specific action are similar to antibodies, in Tokin's opinion (Mikrobiologiya, Vol XVIII, No 1, 84-90).]

External conditions affect various functions of the living organism. This includes formation of antibodies, which is definitely influenced either positively or negatively by metabolism and various factors having a direct or indirect effect on metabolism. The formation of antibodies can be easily influenced by acting on the digestion or on the nervous system. It is known that a number of substances, when introduced into the body of the immunized animal, stimulate the formation of antibodies.

In our experiments we have studied the effects of garlic, horse-radish, and onion phytoncides on the formation of agglutinins in the body of rabbits which had been immunized with paratyphoid B vaccine. In the course of these experiments, the juice of the plant in question was introduced subcutaneously during 5 days into the body of immunized animals, while another group of immunized animals served as controls.

One to two cubic centimeters of a 5% aqueous solution of the juice of garlic, horse-radish, or onion were injected into the experimental animals twice daily during 5 days. On the 8th day after each immunization, blood was taken from both the experimental and control animals for an agglutination test. As can be seen from the following table, the phytoncides of the three plants used stimulate the formation of agglutinins.

Increases in the Titer of Agglutinins Under the Effect of Phytoncides of Garlic, Horse-radish, and Onion

<u>Immunization</u>	<u>Titer of Agglutinating Serum of Control Rabbits</u>	<u>Titer of Agglutinating Serum of Rabbits Treated With Phytoncides of:</u>		
		<u>Garlic</u>	<u>Horse-radish</u>	<u>Onion</u>
After first immunization	1:1280-1:2560	1:5120	1:5120	1:2560
After second immunization	1:2560-1:5120	1:10240-1:20480	1:5120-1:10240	1:5120-1:10240
After third immunization	1:5120	1:20480-1:40960	1:20480-1:40960	1:10240

It follows from the results listed in the table that the phytoncides of all three plants are active in stimulating the formation of agglutinins. The juice of garlic is the most effective, while that of onion is the least effective of the three.

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